

IV. AMENDMENTS TO THE CLAIMS

- A. Please cancel claims 23-24, 30 and 36 from the case.
- B. Please further amend the claims as indicated below:
1. (Twice amended) A method for solution-mining of a subterranean material in an elbow well having a single cavity, ~~the~~ said method comprising:

injecting a fluid into ~~an~~ said elbow well, ~~the~~ said fluid forming a subterranean mixture with ~~the~~ said subterranean material in a said single cavity; and

collecting ~~the~~ said subterranean mixture from ~~the~~ said elbow well.
 2. (Amended) The method of claim 1, wherein ~~the~~ said subterranean material comprises trona.
 3. (Amended) The method of claim 1, further comprising making ~~the~~ said elbow well.
 4. (Amended) The method of claim 3, wherein said making ~~the~~ said elbow well comprises drilling an elbow well into a bed comprising ~~the~~ said subterranean material.
 5. (Amended) The method of claim 1, wherein ~~the~~ said method further comprises casing ~~the~~ said elbow well.
 6. (Amended) The method of claim 1, wherein said injecting ~~the~~ a fluid further comprises injecting ~~the~~ said fluid into an injection tube located in ~~the~~ said elbow well.

7. Cancelled.

8. (Twice amended) The method of claim 1, wherein ~~the~~ said single cavity comprises ~~the~~ said subterranean material mixture after said injecting ~~the~~ said fluid.

9. (Amended) The method of claim 1, wherein ~~the~~ said subterranean mixture comprises a subterranean solution.

10. (Amended) The method of claim 1, wherein ~~the~~ said fluid comprises water.

11. (Amended) The method of claim 1, wherein ~~the~~ said fluid comprises a caustic mixture.

12. (Amended) The method of claim 1, wherein ~~the~~ said method further comprises heating ~~the~~ said fluid.

13. (Amended) The method of claim 1, wherein said collecting ~~the~~ said subterranean mixture further comprises collecting ~~the~~ said subterranean mixture through a production tube located in ~~the~~ said elbow well.

14. (Amended) The method of claim 1, wherein said collecting ~~the~~ said subterranean mixture comprises pumping ~~the~~ said subterranean mixture.

15. (Twice amended) The method of claim 14, wherein said pumping ~~the~~ said subterranean mixture comprises lifting ~~the~~ said subterranean mixture through a production tube.

16. (Amended) The method of claim 15, wherein ~~the~~ said method further comprises delivering ~~the~~ said subterranean mixture to a collection location.

17. (Amended) The method of claim 16, wherein ~~the~~ said collection location comprises the earth's surface.

18. (Amended) The method of claim 14, wherein ~~the~~ said method further comprises placing a pump in ~~the~~ said elbow well.

19. (Amended) The method of claim 1, wherein ~~the~~ said method occurs at ambient well pressure.

20. (Amended) The method of claim 1, wherein ~~the~~ said method further comprises processing ~~the~~ said subterranean mixture after said collecting ~~the~~ said subterranean mixture.

21. (Twice amended) A system for solution-mining of a subterranean material in an elbow well having a single cavity, ~~the~~ said system comprising:

a means for injecting a fluid into ~~an~~ said elbow well, ~~the~~ said fluid forming a subterranean mixture with ~~the~~ said subterranean material in a said single cavity; and

a means for collecting ~~the~~ said subterranean mixture from ~~the~~ said elbow well.

22. (Amended) The system of claim 21, wherein ~~the~~ said subterranean material comprises trona.

23. Cancelled.

24. Cancelled.

25. (Amended) The system of claim 21, wherein ~~the~~ said system further comprises a means for casing ~~the~~ said elbow well.

26. (Amended) The system of claim 21, wherein said means for injecting ~~the~~ said fluid further comprises an injection tube located in ~~the~~ said elbow well.

27. (Amended) The system of claim 21, wherein ~~the~~ said subterranean mixture comprises a subterranean solution.

28. (Amended) The system of claim 21, wherein ~~the~~ said fluid comprises water.

29. (Amended) The system of claim 21, wherein ~~the~~ said fluid comprises a caustic mixture.

30. Cancelled.

31. (Amended) The system of claim 21, wherein said means for collecting ~~the~~ said subterranean mixture comprises a means for pumping ~~the~~ said subterranean mixture.

32. (Amended) The system of claim 31, wherein ~~the~~ said system further comprises a means for placing a pump in ~~the~~ said elbow well.

33. (Amended) The system of claim 31, wherein ~~the~~ said system further comprises a means for delivering ~~the~~ said subterranean mixture to a collection location.

34. (Amended) The system of claim 33, wherein ~~the~~ said collection location comprises the earth's surface.

35. (Twice amended) The system of claim 21, wherein ~~the~~ said system operates at ambient well pressure.

36. Cancelled.

37. (Amended) An apparatus for solution-mining of a subterranean material in an elbow well having a single cavity, ~~the~~ said apparatus comprising:

an injection tube, wherein ~~the~~ said injection tube has an injection tube inner diameter of sufficient size to allow for injection of a fluid for mining of a subterranean material; and

a production casing, wherein ~~the~~ said production casing has a production casing inner diameter of sufficient size to allow for production of a subterranean mixture of ~~the~~ said fluid and

the said subterranean material between an outer surface of ~~the~~ said injection tube and an inner surface of ~~the~~ said production casing.

38. (Amended) The apparatus of claim 37, further comprising a production tube for collecting ~~the~~ said subterranean mixture.

39. (Amended) The apparatus of claim 38, further comprising a pump connected to ~~the~~ said production tube.

V. ARGUMENTS

Claims 1-6 and 8-39 are pending in the application. Claims 1, 3-6, 8-10, 13, 21 and 23-28 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,425,003 to Huff. Claims 1, 3-6, 8-10, 13, 21, 23-28 and 37-38 stand rejected under 35 U.S. 102(b) 5,988,760 to Durup *et al.* Claims 19 and 35 stand rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 35 U.S.C. 103(a) as being unpatentable over, U.S. 4,425,003 to Huff. Claims 2, 11, 20, 22 29 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,425,003 to Huff in view of U.S. Patent No. 3,953,073 to Kube. The rejections are respectfully traversed.

A. Applicants note that their prior attempt to place the claims in condition for allowance by inserting the negative limitation “in a single cavity” into the body of the claim was deemed insufficient because of the presence of the transitional verb “comprising” disposed between the preamble and the body of the claims. While Applicants disagree with the rejection, further amendments effected herein include recitation of the mentioned negative limitation *in the preamble*.

Neither Huff nor Durup *et al.* teach “A method for solution-mining a subterranean material *in an elbow well having a single cavity* ... said fluid forming a subterranean mixture with said subterranean material *within said single cavity*,” as recited in the independent claims. To the contrary, Huff expressly teaches “developing contemporaneous cavities” (see, for example, Huff at column 2, lines 58-62), and Durup *et al.* teach “eliminating” portions of the casing with “a cutting apparatus” to form a plurality of “preliminary sub-cavities” (see, for example, Durup *et al.* at column 3, lines 54-67, and column 4, at lines 1-10).

Thus, Huff and Durup *et al.* fail to teach each and every element of the claimed invention, and are therefore inappropriate for citation against the independent claims under 35 U.S.C. § 102(b) and should now be removed. Moreover, since Huff and Durup *et al.*, whether considered alone or in combination, expressly teach away from the “single cavity” element recited herein, it follows that the mentioned references are also inappropriate for citation under 35 U.S.C. § 103 and should now be removed.

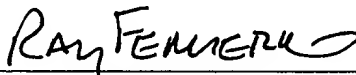
Finally, since each of remaining claims 2-6, 8-20, 22, 25-29, 31-35 and 38-39 depend either directly or indirectly from one of patentably distinct independent claims 1, 21 or 37, it follows that these claims, too, are necessarily distinct and therefore allowable. *See In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

B. Alternatively, should the examiner conclude the instant amendment inserting the phrase “having a single cavity” into the preamble does not sufficiently limit the claims so as to overcome the aforementioned rejections, Applicants kindly request the Office enter a further Examiner’s Amendment changing the open-ended transitional verb “comprising” in each of independent claims 1, 21 and 37 to read “consisting of” (a closed transitional verb clause), which should inarguably place the claims in condition for allowance.

VI. CONCLUSION

In view of the foregoing, Applicants submit that each of the outstanding grounds of rejection pending in the case has been overcome and should now be removed. Reconsideration and withdrawal of the rejections, and allowance of the claims remaining in the case at an early date, are respectfully requested.

Respectfully submitted,



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